DOCUMENT RESUME

ED 255 641 CE 040 900

AUTHOR Halasz, Ida M.; Desy, Jeanne
TITLE Managing Learning Time: A Vocational Educator's Handbook. Special Publications Series No. 45.
INSTITUTION Ohio State Univ., Columbus. National Center for Research in Vocational Education.
SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE 84
CONTRACT 300-83-0016
NOTE 52p.; For related documents, see CE 040 861 and CE 040 899.
AVAILABLE FROM National Center Publications, Box F, National Center for Research in Vocational Education, 1960 Kenny Road, Columbus, OH 43210-1090 (SN45--$5.50).
PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Classroom Observation Techniques; Data Analysis; Data Collection; Guidelines; Postsecondary Education; Records (Forms); *Research Design; *Research Methodology; Research Needs; *Research Utilization; Secondary Education; Technical Education; *Time Factors (Learning); *Time Management; *Time on Task; Vocational Education; Worksheets

ABSTRACT

This handbook is designed to guide teachers, administrators, supervisors, inservice coordinators, and teacher educators in conducting time-use analyses. Discussed in the first two chapters of the guide are key concepts and definitions pertaining to time-use analysis and highlights of research dealing with time use in education. The remaining three chapters deal with the following three stages in conducting a time-use analysis: discovering how time is used (planning a time-use analysis and conducting observations); deciding what change is needed (computing time use, displaying results, and interpreting findings); and changing day-to-day practice (enhancing time use and developing action plans). Appendixes to the manual include an observation form and a series of worksheets on the following topics: computing and displaying time use, interpreting results, and developing a teacher's action plan. A list of references concludes the guide. (MN)

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ED255641

Special Publications Series No. 45

MANAGING LEARNING TIME: A VOCATIONAL EDUCATOR'S HANDBOOK

Ida M. Halasz
Jeanne Desy

The National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

1984

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FUNDING INFORMATION

Project Title:	Guidelines for Assessing Vocational Education Productivity Related to Student Time on Task
Contract Number:	300830016
Project Number:	0510C40060/0510C40061
Act under Which Funds Administered:	Education Amendments of 1976, P.L. 94-482
Source of Contract:	Office of Vocational and Adult Education U.S. Department of Education Washington, D.C. 20202
Contractor:	The National Center for Research in Vocational Education The Ohio State University Columbus, Ohio 43210
Executive Director:	Robert E. Taylor
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FOREWORD

How students spend their time in school has become a critical issue. Research involving elementary and academic high school students indicates that time on task is a key variable to learning. Furthermore, time use is one of the few variables teachers can change.

Prior to the time-on-task research conducted by the National Center, only limited information was available about how vocational education students and teachers use time. The first of the National Center's studies provided a database on time use in secondary vocational programs. The second study expanded that database by adding postsecondary programs and focusing on the teacher behaviors and classroom variables that may affect student time on task.

This handbook is intended to guide teachers, administrators, supervisors, inservice coordinators, and teacher educators in conducting time-use analyses. It can be used in both secondary and postsecondary settings for various purposes, such as teacher inservice activities, research for decision making, preservice teacher education, or process evaluation for program improvement.

Not only does this handbook provide procedures for observing and analyzing time use, but it also explains how to interpret the results and use them to improve use of time in the classroom. Strategies based on the results of time-use studies in vocational-technical classes provide concrete recommendations for changes.

This project was conducted in the Evaluation and Policy Division of the National Center under the direction of N. L. McCaslin, Associate Director. We wish to thank Ida Halasz, Project Director, and Jeanne Desy, Program Associate, who developed this handbook, and Sue Raftery, Graduate Research Associate, who assisted them. We appreciate the many hours of typing done by Marjorie Arnold and the graphic design of Dennis Mathias and Kathy Kush. Graphics services were directed by Ernie Spaeth and editing was provided by Judy Balogh under the supervision of Janet Kiplinger.

We are also grateful to Lorin Anderson, Professor of Education, University of South Carolina for his thorough review as well as to George Sterling, Division of Vocational Education, Ohio Department of Education and Peter Maneff, Acting Director, Northeast Career Center in Columbus, Ohio for their insightful suggestions in developing this handbook.

The funds for this study were provided by the Office of Vocational and Adult Education, U.S. Department of Education.

Robert E. Taylor
Executive Director
National Center for Research
in Vocational Education

EXECUTIVE SUMMARY

This handbook provides guidelines for making better use of time in secondary and postsecondary vocational-technical classes. Interest in time use has increased sharply in recent years. For instance, one of the recommendations in *A Nation at Risk* (National Commission for Excellence in Education 1983) was to increase time for learning. Research shows that time is a critical factor because more time on task increases students' achievement.

Furthermore, time use is one of the few variables related to student achievement that teachers can control in the classroom. Therefore, by learning to make better use of time teachers can improve vo-tech education. Teachers can "teach smarter" by changing the ways they manage student time

This handbook is designed to guide teachers, administrators, supervisors, inservice coordinators, and teacher educators in conducting time-use analyses. The three stages of time-use analyses are as follows:

1. **Discover** how students use time through observation in the classroom.

2. **Decide** if it is necessary to increase time on task.

3. **Change** day-to-day practice in the classroom if increased time on task is desired.

The methods presented in this handbook are based on studies conducted in secondary and postsecondary vo-tech classes (Halasz and Behm 1983; Halasz, Behm, and Fisch 1984). The results of these studies showed that secondary students were, on the average, on task about 71 percent of the class time, whereas postsecondary students were on task about 83 percent of their classroom time. The studies also showed that teachers have a great deal of control over how students spend their time, and that certain teacher behaviors promote more time on task than others. These findings have been used to arrive at strategies for increasing time on task.

This handbook provides background information and step-by-step procedures to conduct time-use analyses. An example is given throughout to illustrate the use of observation form and the five worksheets. The reproducible worksheets and observation form are contained in the Appendix.

Once time use has been determined, specific strategies to increase time on task can be selected. The strategies discussed here are—

- treat time as an important resource,
- define individual student and class goals clearly,
- plan and organize class activities in advance,

- use a wider range of teaching methods,
- have positive expectations of students and reinforce them in a positive manner,
- encourage students to work independently,
- assign meaningful tasks,
- minimize scheduled, whole-class breaks,
- decrease opportunities for interruptions from outside the classroom, and
- serve as a role model of the world of work.

CHAPTER 1
INTRODUCTION

Purpose of This Handbook

This handbook provides guidelines for enhancing the use of time in secondary and postsecondary vocational-technical classes. It is intended to guide teachers, administrators, supervisors, inservice coordinators, and teacher educators through conducting time use analysis. It also provides research-based tips on how to help students make better use of class time. *A Nation At Risk*, the report of the National Commission for Excellence in Education (1983), convinced the public that education must be improved in the United States. One of the commission's recommendations was to increase the time available for learning. Time is a critical factor because, as research shows, more time on task leads to higher student achievement in school.

Making better use of time is one way to improve vo-tech education. In fact, the use of time is one of the few variables related to student achievement that teachers can control in the classroom. Teachers cannot control other important variables such as student ability, aptitude, or family background. Teachers can, however, "teach smarter" by changing the ways they manage students' time in the classroom. Certain teaching and management methods enhance time on task more than others. As a result, students spend more time learning skills related to the curriculum and are better prepared to succeed on the job after graduation.

Figure 1 illustrates the three stages of time-use analyses. As shown, teachers first *discover how students use time* in their classes through time-use analysis (stage 1). Second, they *decide if it is necessary to increase time on task* (stage 2). Third, they *change their day-to-day practice* in ways that are known (through research) to increase students' time on task (stage 3).

This handbook provides background information and specific guidelines in the form of worksheets to observe and analyze time use. What is more important, the handbook explains how to interpret the results. Strategies based on research in vo-tech classes, provide concrete recommendations for changes indicated in the results of the time-use analyses.

Staff in secondary and postsecondary settings can use this handbook for various purposes. The procedures are based on methods used to research time on task in secondary and postsecondary classes. The step-by-step procedures are useful for—

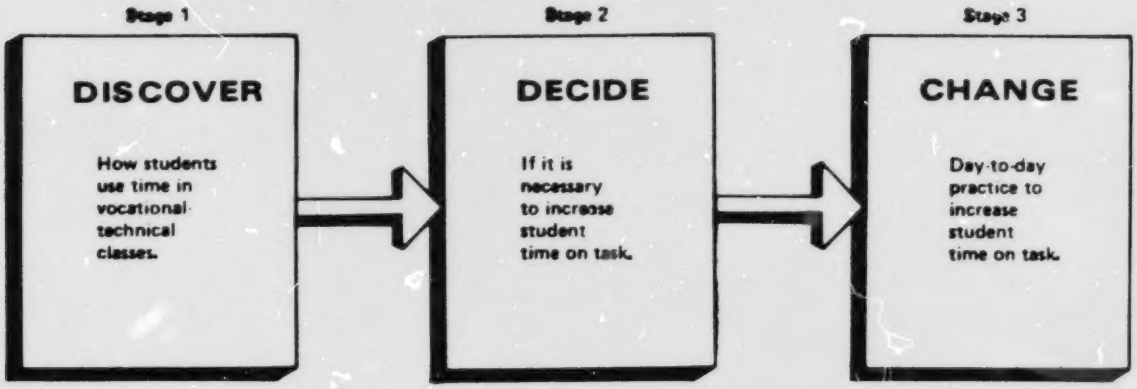

Figure 1. Stages of using time better

- teacher inservice activities,
- research for decision making,
- process evaluation for program improvement, and
- preservice teacher education.

The handbook is designed to guide an individual (or a committee) in organizing the observations for any one of these purposes. The individual assuming such responsibilities could be—

- a master teacher leading a committee to promote excellence,
- the vocational director of a secondary area school or system,
- the local or State system's evaluation and research director,
- the director of the technical department of a community college,
- the local system's supervisor for a service area,
- the systemwide inservice coordinator,
- a university professor of teacher education classes,
- a State department administrator, or
- a regional or intermediate unit coordinator.

Regardless of who organizes the observations, *it is highly recommended that the teachers of the classes selected for observations be involved in planning*. When time use analysis is used as an inservice activity, teachers should participate voluntarily. When it is used for process evaluation of a program, classes can be selected randomly or purposively, but always with the teachers' involvement and consent throughout.

Most teachers have never observed other teachers' classes or had their own classes observed by other teachers. They can learn a great deal in either role. Teachers whose classes are observed can benefit from the results and make changes that increase time on task. Meanwhile, observers can learn how other teachers deal with various classroom situations and how students spend their time, especially when their teachers are busy with other students.

The best way to use this handbook is to first read it through to understand the underlying concepts and the entire procedure. Then duplicate copies of the five worksheets and the observation form that have been included in the Appendix to help in planning the observations and interpreting the results.

Key Concepts and Definitions

Before reading further, you should know a few key concepts and definitions. It is important to know that student use of time in classrooms for activities that build their vocational-technical skills is called *time on task*. In other words, when students are involved in a discussion, listening to a lecture, seeing a filmstrip, practicing on a piece of equipment, taking a quiz, cleaning up their work area, or doing anything to increase their ability to work in occupations related to their class, they are spending time on task.

The opposite is *time off task*, or the time students spend on activities that do not lead to building their skills. Some examples are waiting for class to begin when buses are late, chatting with a group of classmates, or leaving the room to wander in the halls.

Figure 2 shows the ways time is used in vocational-technical classes. Notice that the major divisions are *time on task* and *time off task*. *Time on task* is further divided into curriculum-related and

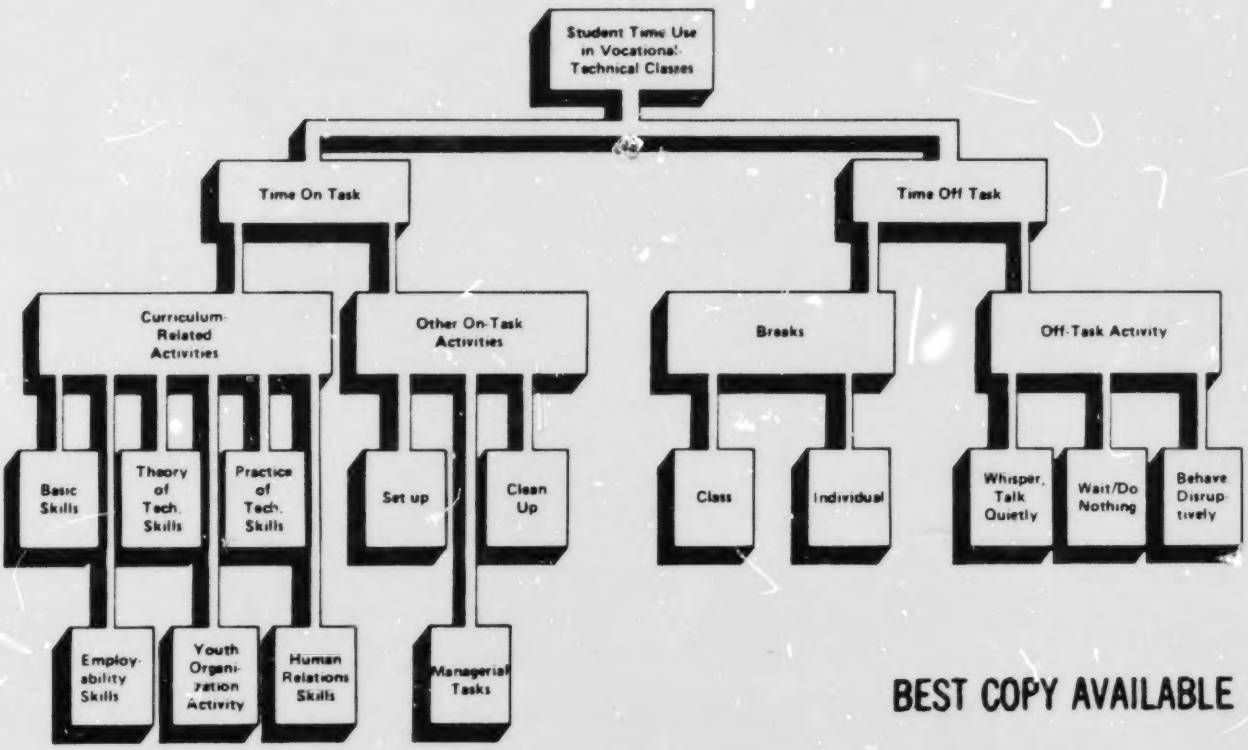

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Figure 2. Student time use in vo-tech classes

other, or non-curriculum-related, activities. Curriculum-related includes basic skills, technical skills, employability skills, human relations skills, and youth organization activities.

- **Basic skills** include reading, writing, and calculations. In most cases, basic skills are learned in combination with technical skills. For instance, the student calculates the length of the board that is needed, then measures the board before cutting it. Another example is the use of workbooks which often combine reading a theoretical description, calculating several problems, then writing answers to questions about the information covered.

- **Technical skills** are the substance of the vocational-technical curriculum. They include both *theory* and hands-on *practice* of various tasks that require manual proficiency and complex cognitive understanding. Technical skills also include knowing appropriate occupation-related procedures and the use of tools, equipment, and facilities.

- **Employability skills** encompass three areas. *Work values or attitudes* may be taught through discussions about getting to class or work on time and doing one's work well. *Job-seeking, maintaining, and advancing skills* include practice in developing a resume and learning about interpersonal skills that are necessary for success on the job. *Knowledge of the world of work* can be taught through discussions about job opportunities, wage structures, and the social or personal implications of chosen jobs.

- **Human relations skills** include activities that help students become socialized to the world of work. These skills are interpersonal and social skills that students need in order to become accepted and succeed on the job. Human relations skills are a very important part of the curriculum in vo-tech classes, especially those for the disadvantaged and handicapped. An example of how they are taught is a student coffee break held to socialize students to similar activities on the job.

- **Youth organization activities** include HERO, FFA, VICA, DECA, FBLA, OEA, and other school-sponsored activities that are part of the vo-tech curriculum. These activities are on task because they use and reinforce various skills, including leadership and interpersonal skills that students will use on the job.

Other on-task activities include setting up for practice, cleaning up afterwards, and managerial tasks. *Managerial tasks* include listening to public address announcements, filling out forms to take a bus trip, or any other activity that is assigned or necessary but is not related to the curriculum.

Time off task has two major divisions. The first is time for breaks. Mandatory breaks may be scheduled for the whole class, or individual breaks used to visit the restroom or get a drink of water. Other off-task activities include whispering or talking, waiting or just doing nothing, and behaving disruptively. In general, off-task activities are those that do not add to the students' vo-tech skills.

In this handbook, time use is referred to in terms of the *proportion* or *percentage* of class time given to a specific activity. Thus, when reading about studies conducted in vo-tech classes, you will notice that, on the average, secondary students were on task 71 percent of the total class time. You will further read that postsecondary students were on task 83 percent of the total class time. The postsecondary students, in other words, spent a higher proportion of their classroom time in on-task activities.

You will also see graphs of student use of class time for various activities, such as technical skills or human relations skills. Picturing proportions or percentages graphically is an easy way to explain how time has been spent in vo-tech classes. By following the step-by-step procedures in chapters 3 and 4, you will also be able to create graphs that show how time is spent in classes you observe or organize for observations.

Chapter 2
Time Use in Education

Highlights from Research

The concept of time on task—the time when a student is actively learning—is the fruit of a century of research. Early studies emphasized time in the classroom as a measure of learning. One result of this focus is today's requirement of a specific number of Carnegie Units for graduation from high school.

The recent change in emphasis from *time in class* to *time on task* is due largely to the work of two modern theorists. The first, John Carroll (1963), concluded that how much students learned depended on the amount of time they actually spent on learning tasks. Later scholars became increasingly interested in Carroll's theory—and for good reason. Many variables that influence learning have been closely studied, but time is unique among them. It can be easily measured, in contrast to such factors as student ability. It can also be managed. Although teachers have little control over many variables such as class size and equipment, they can control the amount of time given to learning tasks in the classroom.

The term "time on task" was coined by Benjamin Bloom in 1977. Building on Carroll's theory, Bloom developed a model for "mastery learning." What did it take to achieve mastery of a skill or concept? It took time, Bloom concluded. After studying time spent on learning tasks, he believed that students who had enough time to learn, and who were encouraged to spend that time actively trying to learn, would master their subjects.

Since Bloom's theory appeared, an astonishing amount of research has been done on the concept of time on task. For example, Stallings (1980) found that achievement depends on how time is used—not on the length of the class or the school day. This means the role of the teacher is crucial since it is the teacher who determines how most classroom time is used.

Research on *how* teachers can increase time on task suggests that one way is simply to allot more time for learning activities. Fisher and others (1978) found that when teachers did so, classes spent more time on task. Whether or not allocated time is used for learning is still very important, of course. When higher proportions of allocated time are used for learning, students tend to achieve more.

How do teaching methods affect time on task? Not surprisingly, students respond differently to different methods. For example, one study found that students with high aptitude and high confidence in their academic ability spent more time off task when they were in groups than when they were working on their own. Both high and low achievers tended to spend more time on task when two-way communication methods such as discussion were used (Anderson and Scott 1978).

The amount of time individuals need in order to learn also varies. Low achievers need more time than high achievers (Bloom 1977). Low achievers, however, spend less time on learning tasks, not more. Evertson (1980) found these students were on task only about 40 percent of their classroom time. In contrast, high achievers were on task 85 percent of the time—more than twice as much as low achievers. While high achievers worked, low achievers spent much of their off-task time waiting and doing nothing.

These and many other studies reinforce John Carroll's original belief that, in general, more time on task means greater student achievement. When students spend more time learning, they learn more.

Studies of Vo-Tech Classes

In 1982, the Commission on Excellence in Education identified time spent on subjects as one of the variables most crucial to improving the quality of education. The commission's statement reflected a growing general acceptance of the importance of student time on task. Numerous studies have shown that the amount of time students spend in learning activities is reflected in their academic achievement.

Until recently, however, little research had been done on vocational-technical classes, although it seemed likely that time would be used differently in these classrooms. In academic classes, for instance, students achieve most when lecture, demonstration, and discussion are the primary teaching methods. In vocational-technical classes, where much time is customarily given to individual work, students might achieve more with a different combination of instructional methods. To explore these possibilities, two studies were carried out at the National Center for Research in Vocational Education.

The first study (Halasz and Behm 1983) concentrated on secondary classes. Classes were observed in seven comprehensive high schools and area vocational schools located in four states. The classes represented several program areas. Observers spent 2 weeks at these sites. They recorded the activities of each class on a form similar to the one in this handbook for 10 full class meetings.

The second study (Halasz, Behm, and Fisch 1984) included 16 postsecondary and 9 secondary vocational-technical classes in schools located in 2 states. Again, the secondary schools included were both comprehensive and area vocational schools. The postsecondary classes were in a community college and an adult technical school. During these 2 exploratory studies, 338 secondary and 328 postsecondary students were observed.

The Secondary Classroom

Time on task in the secondary classrooms observed varied slightly in the two studies. Figure 3 shows how time was used across all the classes in the first study. About 63 percent of the time was spent on curriculum-related learning, represented by blocks A, B, C, and D. The largest amount of

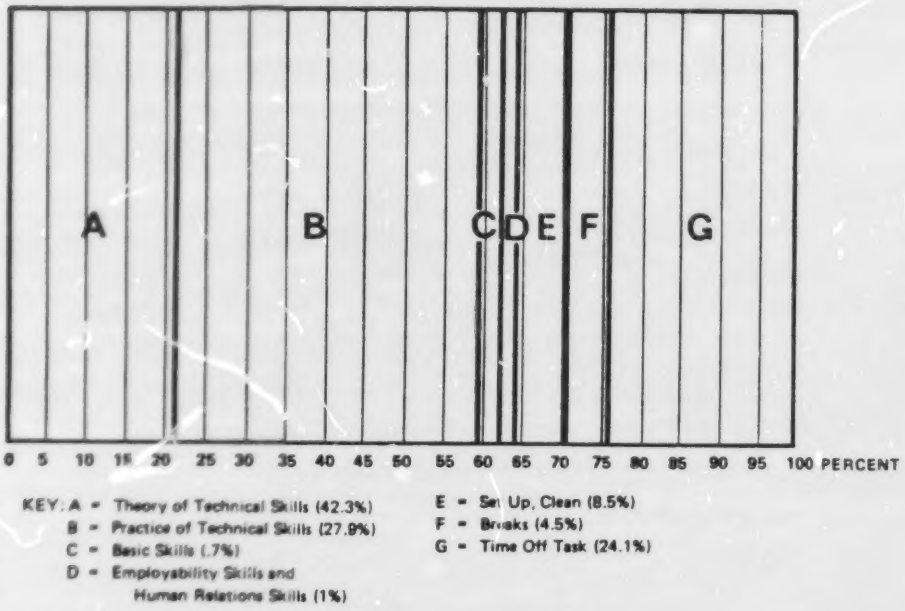

A
B
C
D
E
F
G
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 PERCENT
KEY: A = Theory of Technical Skills (42.3%)
B = Practice of Technical Skills (27.9%)
C = Basic Skills (.7%)
D = Employability Skills and Human Relations Skills (1%)
E = Set Up, Clean (8.5%)
F = Breaks (4.5%)
G = Time Off Task (24.1%)

Figure 3. Time use observed in secondary vocational classes

this time (about 38 percent) was spent in practice, learning technical skills through hands-on work with tools, equipment, and materials. Basic skills, employability skills, and theory accounted for the rest of the time on task.

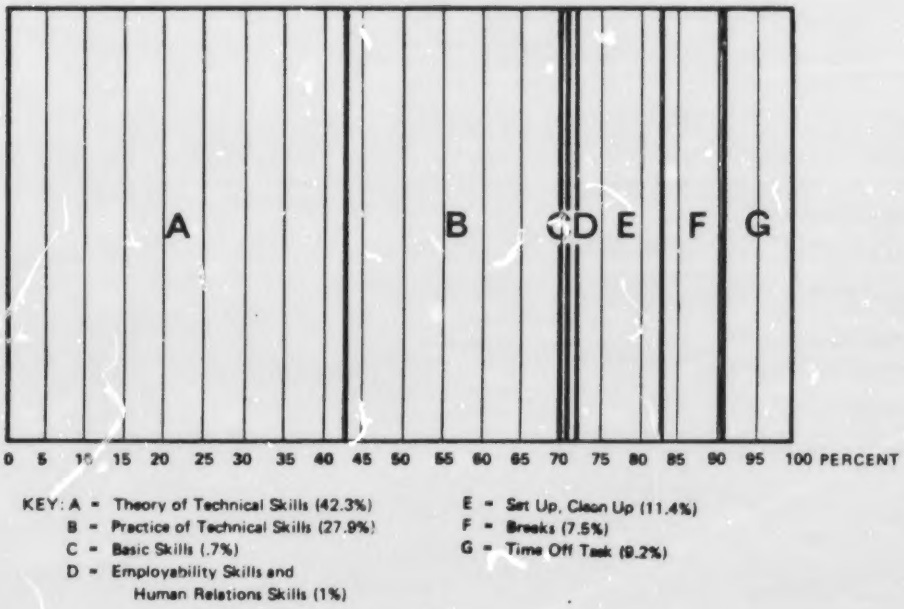
The remaining on-task activities are those which were assigned, but not curriculum related (8.5 percent). Most of this time was spent on setup and cleanup.

Time off task refers to any number of nonlearning activities. Students may be waiting, fooling around, doing nothing, socializing, using the restroom, and so forth. Time off task sometimes results from disruptions within the classroom and interruptions from outside the room, such as public address announcements and visitors. The secondary students observed spent about 29 percent of their time in off task activities. Breaks took almost 5 percent of this time.

Some factors seemed related to how time was used in these secondary classrooms. For example, the longer the class, the greater the proportion of time students spent on task. Class size also influenced time on task; smaller classes spent more time on task than larger ones. In addition, time on task varied with program area. Students in classes such as trade and industrial education, which had more opportunity for hands-on work, tended to spend more time on task.

The Postsecondary Classroom

The postsecondary students observed in the second study spent about four-fifths of their class time on task. As figure 4 shows, most of this time was spent on theory, with sizable amounts also devoted to practice. About 11 percent of the time on task was spent on noncontent activities, much of it on setup or cleanup. For those students, scheduled breaks took 7.5 percent of the classroom time. Their actual time off task was approximately 9 percent of classroom time.


A
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G
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 PERCENT
KEY: A = Theory of Technical Skills (42.3%)
B = Practice of Technical Skills (27.9%)
C = Basic Skills (.7%)
D = Employability Skills and Human Relations Skills (1%)
E = Set Up, Clean Up (11.4%)
F = Breaks (7.5%)
G = Time Off Task (9.2%)

Figure 4. Time use observed in postsecondary vo-tech classes

Although total time on task did not vary much among the service areas, the kinds of on-task activities did. For instance, in the plants and diseases agriculture class, about 86 percent of the time was spent on theory, and none was spent on practice. The business and office classes, on the other hand, devoted over half of their time to practice.

Breaks were handled in various ways, from no breaks to breaks taking 17 percent of the time in one of the classes. Several teachers did not schedule breaks, but had an "open door" policy; students left to get a drink, use the restroom, and so forth, at their own discretion. Usually, these classes had less time off task than those that included scheduled breaks.

Teacher Behaviors

The major purpose of the 1984 study of vo-tech classrooms was to examine how teachers influence time on task. The results showed that teachers do have a definite influence. In most classes, the teacher sets the level of enthusiasm and intensity. When the teacher was actively working, students also worked more. Moreover, there were specific things teachers did which seemed clearly related to increased time on task.

- **Goal definition** was the single most important teacher behavior. Teachers who clearly stated the daily and weekly goals for the class and individuals had classes with the most time on task.

- **An overview of tasks and concepts** helped students understand what they were working toward. They were better able to see how specific skills are used in larger projects.

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- **Planning and organization** meant that supplies, tools, and equipment were ready when class began. This gave students what they needed to accomplish their goals.

- **Awareness that time was important** also characterized teachers who kept their classes on task. Postsecondary teachers in particular seemed to maximize the time available, perhaps because they knew many of their students had other demands on their time.

- **With-it-ness**, the teacher's awareness and sensitivity to students' needs, also helped keep students on task. Teachers who had this awareness knew when students needed help or supplies to proceed. They did not waste their students' time.

- **Maximizing the available time** was characteristic of teachers whose classes had high time on task. These teachers seemed to share their students' urgency about accomplishing learning tasks.

- **Varying teaching methods** by using demonstration, discussions, and so on, in addition to one-on-one instruction, helped classes spend more time on task.

- **Modeling the work ethic** seemed to inspire students to be more on task. Teachers who were good role models dressed and acted in a professional manner and were never idle during class time. Many part-time postsecondary teachers who worked in the fields in which they were teaching referred often to the world of work.

- **Positive expectations and positive reinforcement** often went hand-in-hand. Postsecondary students, despite their higher personal motivation, seemed to benefit from a teacher's confidence and praise just as much as secondary students.

- **Ensuring that tasks were meaningful**, rather than repetitious or mechanical, challenged students and kept them more engaged in learning.

- **Encouraging students to work independently** seemed to allow them to feel ownership of their work. Teachers who set clear goals facilitated independence; their students were able to keep working rather than wait, off task, for new instructions.

The findings about ways teachers affect time on task in vocational-technical classrooms may be the most important result of these studies. They strongly suggest that analyzing time use in the classroom can help identify ways to change the use of time and increase student learning.

Chapter 3
First Stage:
Discover How Time is Used

The first stage in enhancing time on task is to discover how class time is being used. This stage includes planning the time-use analyses and conducting the observations in the classrooms. After reading about these procedures in this chapter, use copies of Worksheet I and the observation form (included in the Appendix) to discover how time is used in the class or classes you wish to analyze.

Plan Time-Use Analyses

Careful planning is essential for discovering how class time is used. Several related factors are involved in planning time-use analyses in vo-tech classes. These include (1) determining why the time-use analysis is being done, (2) selecting specific classes, and (3) scheduling staff. It is difficult to say which comes first. Realistically, in most educational organizations, resources are a major factor in planning staff development or evaluation activities, and must often be given primary consideration.

The most critical resource in time-use analyses is staff time and availability to conduct observations and analyze results. Each time-use analysis requires several hours of observation of that class. To be done fairly and correctly, each class should be observed for at least three entire class periods.

Another important factor is how the time-use analyses are explained to teachers. Any form of observation in the classroom can be threatening to teachers. Even inservice activities and process evaluations, which are positive ways to improve programs, are sometimes feared. Because fear can be a problem, the next section is devoted to building understanding of this process.

Explain Time-Use Analyses

The best approach to lessen teachers' fear is to use time-use analyses in the teacher inservice program. Thus, improving the productivity of vo-tech classes becomes a goal of the inservice program rather than an aspect of evaluation. Another approach is to make time-use analyses one part of the process evaluation of programs. Yet a third approach is to use time-use analyses to research

information for decision making. Finally, time-use analyses become an excellent way to provide feedback to student teachers about their practice-teaching sessions.

Regardless of the stated purpose, teachers should be involved in planning and implementing time-use analyses. In some schools, teachers can be scheduled to conduct observations in each others' classes. This approach obviously requires a great deal of coordination, but it can be very helpful because teachers rarely have the opportunity to watch each other teach and manage classes. A National Institutes for Research report pointed out that "school improvement is most surely and thoroughly achieved when teachers and administrators frequently *observe* each other teaching and provide each other with useful (if potentially frightening) evaluations of their teaching" (Fullen 1982, p. 29). Through carefully planned rotation, all teachers could have the opportunity to learn through serving as observers and through having time-use analyses of their classes conducted by other teachers.

If involving teachers as observers is not practical, supervisors, administrators, or evaluators should conduct the observations. But be sure to involve teachers as much as possible in planning. You should also explain the purposes and uses of time-use analyses to them. Teachers will undoubtedly know that how students use class time directly reflects upon their teaching. Although most teachers want to improve their instructional and managerial behaviors, like other professionals, they can be sensitive to recommendations that require changes.

Involving teachers in the process usually lessen their concerns. It is also helpful to assure them that all observations will be completely confidential. You can maintain confidentiality by discussing results only with the teachers and administrators who are directly involved. Maintaining confidentiality encourages teachers to accept the process as a way of improving the productivity in their classes rather than a way of judging them as teachers.

Select Classes

How you select classes depends both on your role and the specific purpose of the time-use analyses. If you are the director of vocational education for a large city, you can conduct time-use analyses for research. You may need to know, for example, the average amount of time on task across all classes before making a decision to implement inservice training to increase students' productivity. If so, you would select classes differently than would the director of an area vocational school, whose purpose may be to conduct process evaluations for each service area.

The first of several ways to select classes is *random selection*. You would choose this method if you were the large-city director of vocational education or a State evaluator. Random selection is especially useful when you have over 100 classes and wish to generalize about time use in the school system, region, or State. With random selection, you can observe several classes and assume that the results represent all the classes with some room for error.

For example, you could learn the average level of time use in 200 classes, by conducting analyses in only 65 classes (chosen by pulling names out of a hat). The results would be, at most, 10 percent above or below what they would be if every class were observed. The advantage of random selection is that, without conducting analyses in all the classes, you can have trustworthy information about time use across all the classes. The drawback is that teachers are less likely to make changes in their own classes when the results are based on the observations of others.

A second way to choose classes is called *purposive selection*. This simply means that you select classes for a specific purpose because random selection is not possible or not desirable. Purposively selected classes are not representative of all classes. In many cases, however, purposive selection provides a better picture of time use than a random selection does.

Imagine that you need to know the average level of time on task across five service areas but have the resources to conduct only five analyses. You should choose the one class in each service area that you feel is most typical of all the classes. Of course, human nature being what it is, most administrators might tend to choose the better classes as opposed to average ones. One way to avoid that pitfall is to use some criterion, such as student grades, on which to base the decision.

A third way to select classes is to request *volunteers*. Teachers who volunteer their classes for time-use analyses may be concerned with time use or may feel their classes have a very high percentage of time on task. This means that volunteer classes are less likely to be representative of other classes than the results from classes selected randomly or purposively. This method of selection may be least useful for research and most useful when time-use analyses are a part of teacher inservice.

The remaining way to select classes is *not to use a method of selection at all*. Rather time-use analyses may be conducted in every class. Obviously, this method provides the most direct information that teachers can use to change their instructional and managerial behaviors related to students' time use. If a few time-use analyses are conducted every week throughout the school year, the supervisor, administrator, or peer teacher observers should not be overextended at any one point in time. If all classes are involved, there is also less tendency for teachers to feel threatened than if they are randomly or purposively selected. When possible, this may be the best way to select classes when the results are to be used in process evaluation of vo-tech programs.

Schedule Time-Use Analyses

Ideally, each class should be observed three to five times for entire class periods. Because vo-tech classes can be up to 3.5 or 4 hours long, considerable time is needed for each time-use analysis.

Because there are many changes during a class period in a typical vo-tech class, classes should be observed for entire class periods. In a study described in chapter 2, Halasz and Behm (1983) found that every class differs in its pattern of time on and off task. This is illustrated in figure 5, which shows the variations of student time on and off task during Monday, Wednesday, and Friday of a week of observation. The number of students on task are shown in relation to the number of minutes (55) of class time. Notice that if you observed only the first half of these particular classes, you would have had a higher proportion of time on task than if you observed only the second half.

Figure 5 also shows why it is important to observe for at least 3 days. As in this case, the first day is often unusual because the teacher and students are very much aware that they are being observed. Although, as a well-known researcher, (Kerlinger 1973) observed, "Teachers cannot do what they cannot do" (p. 539). By the second and third day, teachers and students usually relax and go about their normal activities. For these reasons, you should plan to observe each class for at least 3 full class periods within 1 week.

Use Worksheet I (found in the Appendix) to schedule the observations. Figure 6 is an example of Worksheet I as it was used by the director of an area vocational school to schedule four time-

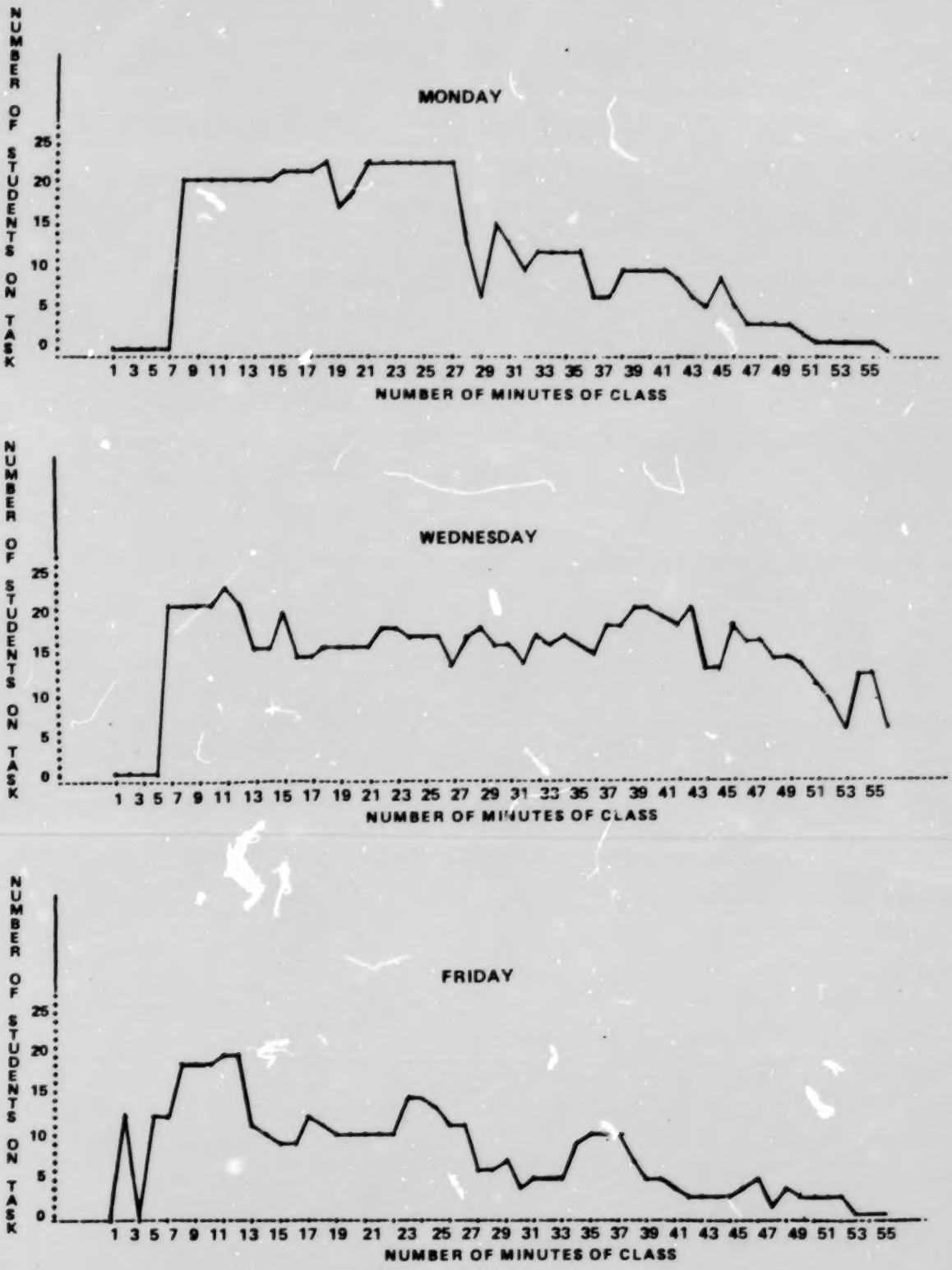

Figure 5. Variations in time on task during three days

use analyses. In this case, the time-use analyses were part of the inservice program. The teachers in this school teach during either the morning or the afternoon, and spend the remaining time planning, developing materials, visiting students at cooperative education sites, and meeting with employers. They have been scheduled here to observe each other's classes during their planning time.

Worksheet I

OBSERVATION SCHEDULE

Date: December 10 — Organizer: Pat Jackson

School: Washington TVS — Position: Director

Class	Begin-End Times	Teacher	Observation Dates 1st	2d	3d	4th	5th	Observer
Electronics II	8:00 — 11:15 am	Mr. Lee	Mon. Jan 2	Wed. Jan 4	Fri. Jan 6			Mr. Howell
Basic Mdsg. & Distribution	12:15 — 3:30 pm	Ms. Gomez	Tues. Jan 3	Wed. Jan 4	Fri. Jan 6			Ms. Phillips
Typing II	8:00 — 11:15 am	Ms. Phillips	Mon. Jan 2	Tues. Jan 10	Thurs. Jan 12			Mr. Lee
Auto Mechanics	12:15 — 3:30 pm	Mr. Howell	Wed. Jan 11	Thurs. Jan 12	Mon Jan 13			Ms. Gomez

Figure 6. Example of Worksheet I used to schedule observations

Conduct Observations

Parts of the Observation Form

At first glance, the observation form may appear complex, but it is really simple to use. Figure 7 shows a smaller version of the reproducible form contained in the Appendix.

First, notice the information requested at the top of the form. Be sure to fill in all the blanks on the *first page* you use for each class. You will probably use several pages of the form for each class period observed since each page has room for only 30 minutes of observation. Now read the headings across the form. The one at the left is easy—"Time." Since you will record activities every other minute, you will start with the second minute of class time. Fill in the hour and minute. You

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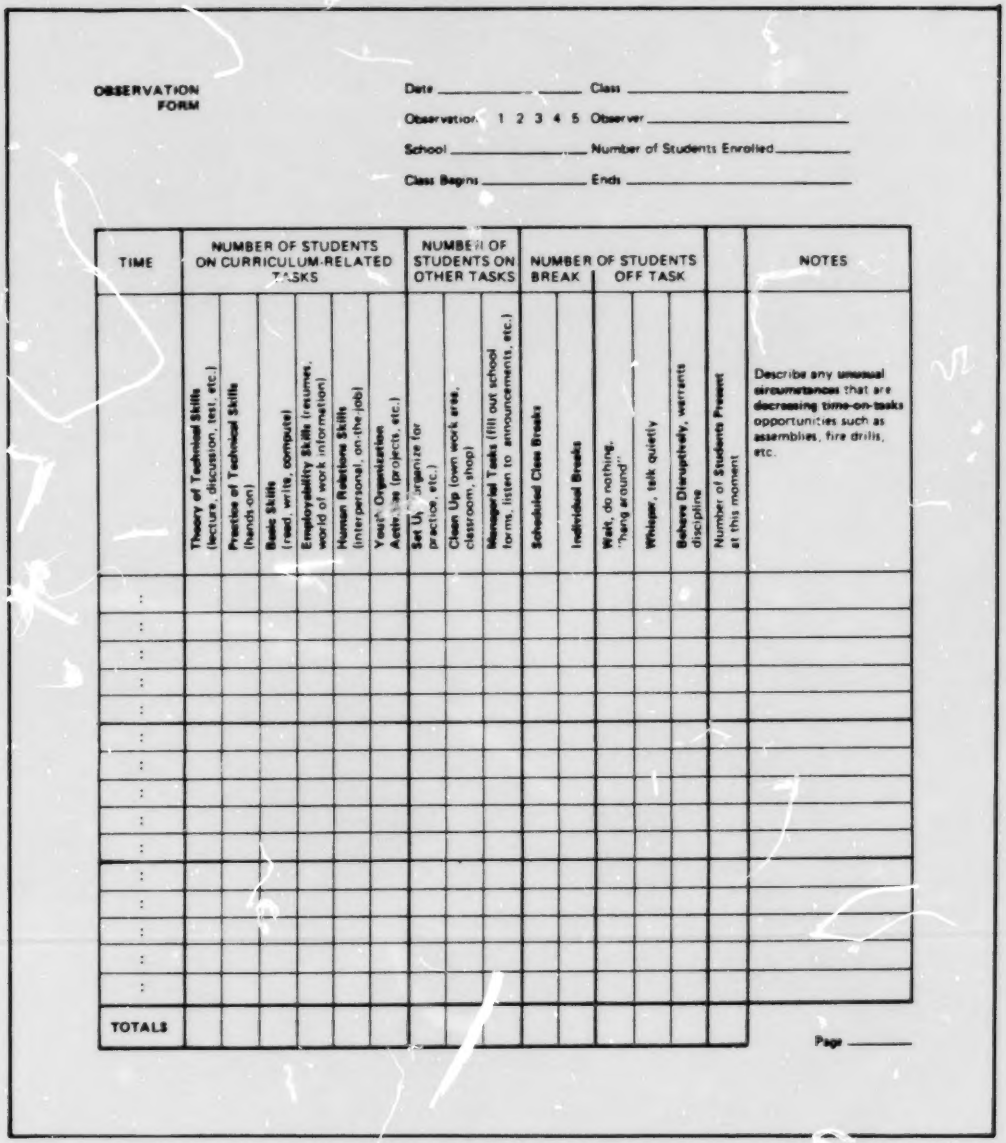

OBSERVATION FORM

Date _____ Class _____

Observation 1 2 3 4 5 Observer _____

School _____ Number of Students Enrolled _____

Class Begins _____ Ends _____

TIME	NUMBER OF STUDENTS ON CURRICULUM-RELATED TASKS							NUMBER OF STUDENTS ON OTHER TASKS			NUMBER OF STUDENTS OFF TASK					NOTES
	Theory of Technical Skills (lecture, discussion, test, etc.)	Practice of Technical Skills (hands-on)	Basic Skills (read, write, compute)	Employability Skills (resumes, world of work information)	Human Relations Skills (interpersonal, on-the-job)	Your Organization Activities (projects, etc.)		Set Up, Organize for practice, etc.)	Clean Up (own work area, classroom, shop)	Managerial Tasks (fill out school forms, listen to announcements, etc.)	Scheduled Class Breaks	Individual Breaks	Wait, do nothing, "hang around"	Whisper, talk quietly	Behave Disruptively, warrants discipline	Number of Students Present at this moment	Describe any unusual circumstances that are decreasing time-on-tasks opportunities such as assemblies, fire drills, etc.
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TOTALS																	

Page _____

Figure 7. Observation form

must observe what is happening *before* you record the activity, so if the class starts at 8:00 a.m., the first time you fill in should be 8:02. Then write 8:04, 8:06, 8:08, and so forth for all of the class time you observe.

The next three headings indicate three broad types of activities students spend time on vo-tech classes. *For each 2-minute period of time, write the number of students doing that particular activity in the correct column.* Keep in mind that during any minute each student can be marked as doing *only one* activity. Although a student may be both practicing a technical skill *and* chatting

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with a friend, he or she should be counted only once. *The total number of students marked in all the columns has to add up to the number marked in the "Students Present" column.* Otherwise the percentages (or proportions of time-use) you arrive at will be incorrect.

The first of the three activity headings is "Number of Students on Curriculum-Related Tasks." This section includes activities related to the content of the curriculum such as practicing technical skills, basic skills, and so forth. Sometimes it is difficult to decide whether students are working on technical skills or basic skills. When in doubt, guess. Do not let the need to make a decision keep you from observing and recording every student every 2 minutes.

The second of the three headings, "Number of Students on Other Tasks," includes setup and cleanup, and managerial activities that are not curriculum-content related. Although these are on-task activities that need to be done in most classes, they are not specific to the curriculum.

The third of the three headings, "Number of Students on Break/Off Task," is for activities that are clearly not on task. These include activities such as waiting, talking, and whole-class or individual breaks.

The next column, "Number of Students Present at This Moment," is very important. Write the number of students actually present, not the number you know are enrolled in the class. In some classes students straggle into class so that the number present will change several times during the first few minutes. Do a quick check across each minute to see if the numbers of students in the various columns add up to the number present.

The final section of the form is for "Notes." Use it to describe what is happening, especially events or circumstances that affect time on task. Some examples of unusual circumstances that decrease time on task are fire drills, lengthy public address announcements, visitors, accidents, or emergencies. Be sure to write in the page number at the bottom right. If, for example, the class you observe is 2 hours long, you would use 4 pages. (Each page has room for 15 rows; you would need 1 page per 30 minutes when you record every other minute.)

The very bottom row of the observation form is for "Totals." After you have finished recording an entire class period, add (down) each column on every page. Figure 8 shows page one of several observation forms that were used to record time use in Mr. Lee's class. Note that Mr. Howell, the observer, wrote notes to describe what was happening. He recorded the number of students actually present every 2 minutes and added each column. In chapter 4, you will learn how to record these totals on Worksheet II. You will also learn how to determine the proportions (percentages) of time use.

Observing in Classrooms

After the observation dates are scheduled on Worksheet I, make sufficient copies of the observation form found in the Appendix. *You will need two forms per hour of observation that is scheduled if you record activities on an every-other-minute basis.* Use a clipboard as illustrated in figure 9 to hold the observation forms. Since it is awkward to look at your watch and often inconvenient to look at a wall clock, use an inexpensive stick-on or clip-on quartz clock to keep track of the minutes.

Take several sharpened *pencils* with big erasers because you may need to make changes. For example, if a student leaves the room, you may mark her as "off task, on break." Later, when she

OBSERVATION FORM

Date Jan. 2 Class Electronics I

Observation (1) 2 3 4 5 Observer Ms. Howell

School Wash. JVS Number of Students Enrolled 23

Class Begins 8:00 a.m. Ends 11:15 a.m.

TIME	NUMBER OF STUDENTS ON CURRICULUM-RELATED TASKS							NUMBER OF STUDENTS ON OTHER TASKS			NUMBER OF STUDENTS OFF TASK					NOTES
	Theory of Technical Skills (lecture, discussion, test, etc.)	Practice of Technical Skills (hands on)	Basic Skills (read, write, compute)	Employability Skills (resumes, world of work information)	Human Relations Skills (interpersonal, on the job)	Youth Organization Activities (projects, etc.)		Set Up (organize for practice, etc.)	Clean Up (own work area, classroom, shop)	Managerial Tasks (fill out school forms, listen to announcements, etc.)	Scheduled Class Breaks	Individual Breaks	Walk, do nothing, "hang around"	Whisper, talk quietly	Behave Disruptively, warrants discipline	Number of Students Present at this moment	Describe any unusual circumstances that are decreasing time-on-tasks opportunities such as assemblies, fire drills, etc.
8:02													06	10		16	Teacher working
8:04													06	10		16	at desk. Q from
8:06								03		02			04	08		17	students working on
8:08								05		02			05	06		18	own projects, etc.
8:10								05		04			03	06		18	Bell rings
8:12		05						01		03			03	06		18	Today Students
8:14		05						02		04			03	05		19	met in a big
8:16		07						03		04			02	03		19	hurry to get
8:18		07						03		04			02	02		19	to classes
8:20		08						02		06			01	02		19	to work.
8:22										19				02		21	Teacher takes
8:24										21						21	roll & begins
8:26	21															21	lesson.
8:28	21															21	
8:30	21															21	
TOTALS	63	32						24		69			35	61		284	

Page 1

Figure 8. Example of observation form used to record student activities

returns with supplies from the office, you will want to change that time to "on-task, managerial activities."

As an observer, your mission is to be as quiet and unnoticed as possible under the circumstances. If the teacher talks to you, politely refuse to engage in a conversation. Stay in the background, sit down whenever possible, and do not chat with the students. Even though you may want to, do not offer to help students or give them advice.

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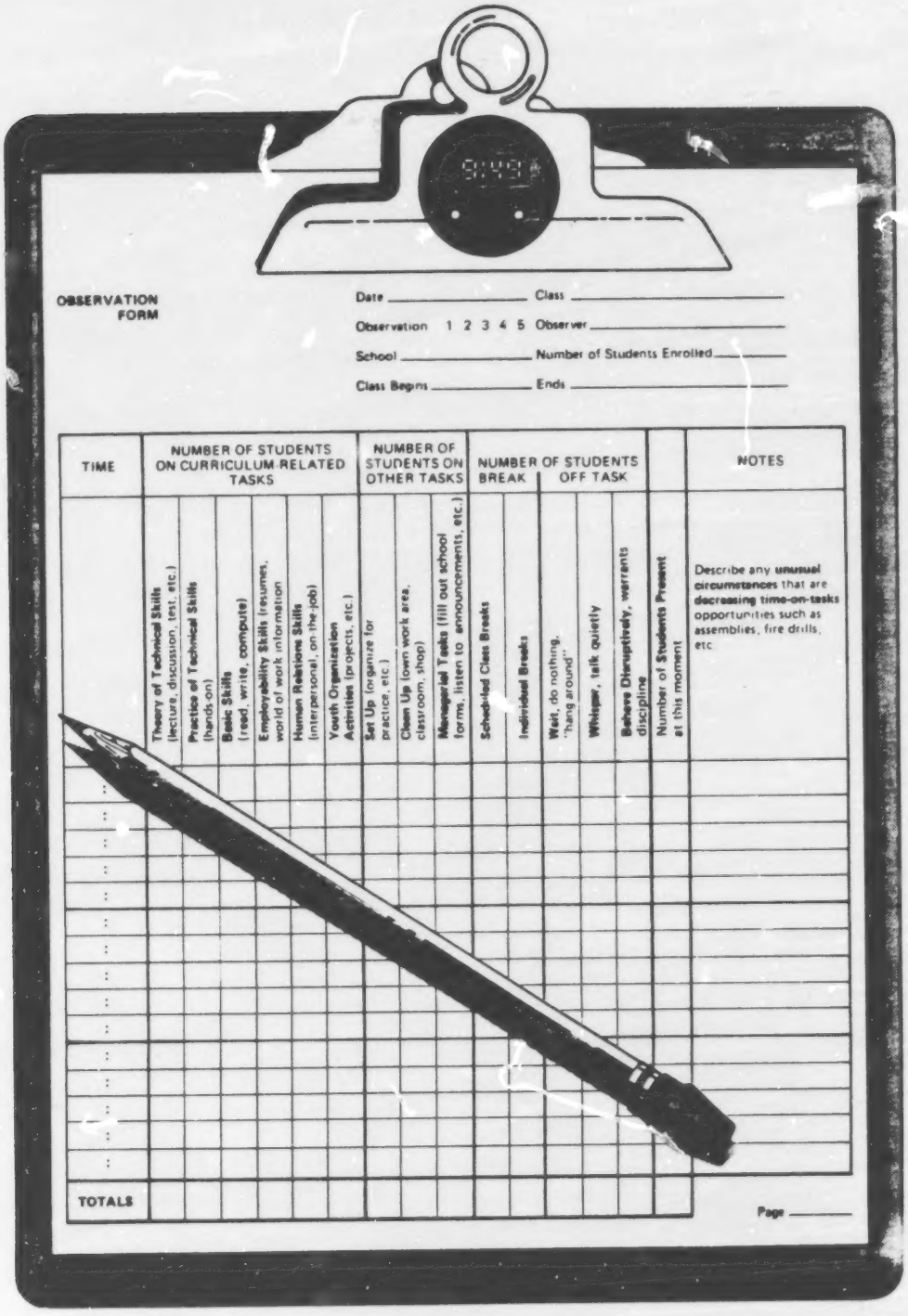

OBSERVATION FORM

Date _____ Class _____

Observation 1 2 3 4 5 Observer _____

School _____ Number of Students Enrolled _____

Class Begins _____ Ends _____

TIME	NUMBER OF STUDENTS ON CURRICULUM-RELATED TASKS							NUMBER OF STUDENTS ON OTHER TASKS			NUMBER OF STUDENTS BREAK		OFF TASK				NOTES
	Theory of Technical Skills (lecture, discussion, test, etc.)	Practice of Technical Skills (hands on)	Basic Skills (read, write, compute)	Employability Skills (resumes, world of work information	Human Relations Skills (interpersonal, on the job)	Youth Organization Activities (projects, etc.)		Set Up (organize for practice, etc.)	Clean Up (own work area, classroom, shop)	Managerial Tasks (fill out school forms, listen to announcements, etc.)	Scheduled Class Breaks	Individual Breaks	Wait, do nothing, "hang around"	Whisper, talk quietly	Behave Disruptively, warrants discipline	Number of Students Present at this moment	Describe any unusual circumstances that are decreasing time-on-tasks opportunities such as assemblies, fire drills, etc.
:																	
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TOTALS																	

Page _____

Figure 9. Use a clipboard, quartz clock, and pencil with eraser for observations

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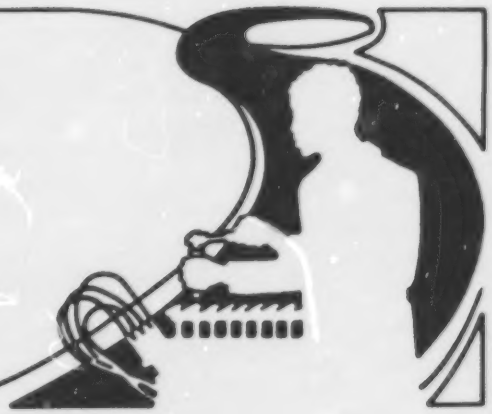
When you enter the classroom for your first observation, you should already be very familiar with the observation form. As you begin observing, the best approach is to scan the classroom systematically from left to right. As you scan, count the number of students who are engaged in the activity, for example, practicing technical skills. Record the number in the correct column on the observation form. Then count and record the number of students engaged in other types of activities. Be sure to count the *total* number of students present every 2 minutes and record it in the last column.

At first you may feel "out of breath" from counting and recording all the students every 2 minutes. After a short while, though, you will be so accustomed to the systematic process that you may even be bored! At that point you will have to concentrate to observe but you will also start seeing interesting variations in students' behaviors.

Sometimes you will find that you have to lie a little to tell the truth as you observe. For example, when students chat briefly (less than 2 minutes), you should not indicate "whisper, talk quietly." However, if the students chat briefly several times, you would indicate that by recording them in the "whisper, talk quietly" column at least once. Observers must make many such decisions which are not easy. It is important that the "picture" you are recording of the use of class time is as fair and truthful as possible.

Chapter 4
Second Stage: Decide What Change is Needed



The second stage in enhancing time on task is to decide what changes are needed. In this stage you will compute time use, display the results, and interpret the results. Use copies of Worksheets II and III (found in the Appendix) to complete this stage.

Compute Time Use

After completing all the observations of a class, as discussed in chapter 3, add (down) the columns on each page of the observation form. Write the results in the "Totals" row across the bottom of the observation form. Use a calculator or adding machine to double-check your answers. Errors in addition can cause many problems later.

As shown in figure 10, Worksheet II has space to record 11 pages of the observation form, or 5.5 hours of observation. You will probably need to use at least 2 copies of Worksheet II to record 3 days of observation in a typical vo-tech class, so be sure to make several copies.

Follow the directions in Part A on Worksheet II, which tell you to add the students present on all the pages to find the *grand total*. Write the answer in the box.

Now record the totals for each activity from each page of the observation form in the appropriate columns of Worksheet II, going from top to bottom. All the totals from page one (of the several observation forms you have used) should be listed in column one.

Add (across) to arrive at a grand total for each activity. Record each grand total on Part B of the worksheet.

Divide the grand total for each activity by the grand total of students. Notice the math symbols that guide you. The resulting answers are the *average proportions* (or percentages) of class time spent on each activity.

When you have finished Part B, add the percentages for all the activities. They should total about 100 percent, but may not be exact. For example, you could have a total of 98.8 or 100.9. If the totals are over 5 percent more or less than 100 percent, double-check your math and retrace your steps to find the errors.

Worksheet II

COMPUTE TIME USE

Class _____ Dates of Observation _____

Directions: Make several copies of this worksheet. Then add the total number of students present on each page of the observation form to find the grand total. The grand total of students present is [ ]. Now, follow the directions in Part A and B. The answers in the last column show the proportions (percent) of class time used for each activity. Keep in mind that all the percents (or the subtotal percents) should add to 100 percent.

	PART A List the totals from the bottoms of all the observation form pages used for this class.												PART B Divide the grand totals for each activity by the grand total number of students present. Write the answer in the proportion (percent) column.		
	Page / Activity	1	2	3	4	5	6	7	8	9	0	11	Grand Total / Divided By Grand Total Students Present	is	Proportion (Percent) of Class Time
	Theory of Tech. Skills												÷	=	%
	Practice of Tech. Skills												÷	=	%
	Basic Skills												÷	=	%
	Employability Skills												÷	=	%
	Human Relations Skills												÷	=	%
	Youth Org. Skills												÷	=	%
SUB TOTAL	Curriculum-Related Tasks												÷	=	%
	Set Up												÷	=	%
	Clean Up												÷	=	%
	Managerial Tasks												÷	=	%
SUB TOTAL	Other Tasks												÷	=	%
	Class Breaks												÷	=	%
	Individual Breaks												÷	=	%
SUB TOTAL	Breaks												÷	=	%
	Wait, Do Nothing												÷	=	%
	Whisper, Talk Quietly												÷	=	%
	Behave Disruptively												÷	=	%
SUB TOTAL	Time Off Task												÷	=	%

Figure 10. Worksheet II for computing time use

After you complete Part B, use the subtotal rows to find the proportions of time spent on the various types of curriculum-related tasks, other on-task activities, breaks, and time off task. Add these four subtotals. Again, they should total about 100 percent.

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If you are thoroughly confused at this point, do not despair! Computing time use is easier to do than it seems in reading about it. Figure 11 shows how Mr. Howell computed his observations of Mr. Lee's class. Notice that the first column lists all the totals from the first observation page Mr. Howell used (see figure 9). Since he used seven observation forms altogether, he also used seven columns on his Worksheet II.

Worksheet II

COMPUTE TIME USE

Class Electronics I Date of Observation Jan 2

Directions: Make several copies of this worksheet. Then add the total number of students present on each page of the observation form to find the grand total. The grand total of students present is 2027. Now, follow the directions in Part A and B. The answers in the last column show the proportions (percent) of class time used for each activity. Keep in mind that all the percents (or the subtotal percents) should add to 100 percent.

		PART A: List the totals from the bottoms of all the observation form pages used for this class.											PART B: Divide the grand totals for each activity by the grand total number of students present. Write the answer in the proportion (percent) column.
	Activity \ Page	1	2	3	4	5	6	7	8	9	10	11	Grand Total / Divided By Grand Total Students Present is Proportion (Percent) of Class Time
	Theory of Tech. Skills	63	46			29	74						212 ÷ 2027 = 10 %
	Practice of Tech. Skills	32	156	94	33	122	21						458 ÷ 2027 = 23 %
	Basic Skills		26	19		14							57 ÷ 2027 = 2.8 %
	Employability Skills			34		21							55 ÷ 2027 = 2.7 %
	Human Relations Skills		18			47							65 ÷ 2027 = 3 %
	Youth Org. Skills						63						63 ÷ 2027 = 3 %
SUB TOTAL	Curriculum-Related Tasks	95	246	145	33	233	158	0					910 ÷ 2027 = 44.5 %
	Set Up	24	21		49								94 ÷ 2027 = 4.6 %
	Clean Up						39	118					157 ÷ 2027 = 7.7 %
	Managerial Tasks	69				09	23						101 ÷ 2027 = 4.9 %
SUB TOTAL	Other Tasks	93	21	0	49	09	62	118					352 ÷ 2027 = 17.2 %
	Class Breaks			105	210								315 ÷ 2027 = 15.5 %
	Individual Breaks		06			09	04	0					19 ÷ 2027 = .1 %
SUB TOTAL	Breaks	0	06	105	210	09	04						334 ÷ 2027 = 16.4 %
	Wait, Do Nothing	35	42	65	13	51	66	22					294 ÷ 2027 = 14.5 %
	Whisper, Task Quietly	61			10	13	25	28					137 ÷ 2027 = 6.7 %
	Behave Disruptively												÷ = %
SUB TOTAL	Time Off Task	96	42	65	23	64	91	50					431 ÷ 2027 = 21.2 %

Figure 11. Example of Worksheet II used to compute time use

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If you add up the four subtotals in Part B of Mr. Howell's worksheet, you will find that

$$44.5\% + 17.2\% + 16.4\% + 21.2\% = 99.3\%.$$

The total is not 100 percent due to rounding, but, as mentioned above, this is nothing to worry about.

When many classes are observed in a large-scale research study or process evaluation, hand calculations may be too time consuming. You should, if possible, use a computer to help in working with such large amounts of information. If you have access to a mainframe computer, you (or your programmer) probably have a statistical computer program (such as SPSS or SAS) that can very quickly do the computation described here. You can also use a personal computer program designed to handle descriptive statistical analysis. If you are using a computer, the formula you need to know is as follows:

$$\frac{\text{total student minutes spent on the activity}}{\text{total minutes in the class} \times \text{average number of students present during observation}} = \text{proportion (or percentages) of time spent on the activity}$$

This formula will be used to compute each activity.

Display Results

There are a number of ways to display the results of your time-use analyses. A simple listing of proportions of time is straightforward and useful. A graph like those shown in figures 3 and 4 is especially helpful to show time use.

Worksheet III (found in the Appendix) provides directions for drawing graphs. Using copies of Worksheet III, follow the directions to create a simple graph. Figure 12 shows how Mr. Howell used this worksheet to display the results of time-use analysis in Mr. Lee's Electronics I class.

As you see, Mr. Howell filled in the key to tell what activity each letter represents. You have the option of showing all the activities as he did, or the four major types of activity which are indicated in the subtotal rows. Whichever you display, you should also include the actual percentage of time for each activity.

You may wish to shade or color areas of the graph to emphasize certain activities. For example, on-task activities could be colored blue and off-task activities red. If time spent on basic skills is especially important, you may want to draw attention to the amount of time by shading that activity.

Interpret Results

The hardest part of time-use analysis is not observing or computing but interpreting the results. Most people want to know, "What is the acceptable level of time on task?" Unfortunately, there is no firm answer to that question. Your organization or committee should make that decision based on the research findings described in chapter 2 and local expectations for time use. For

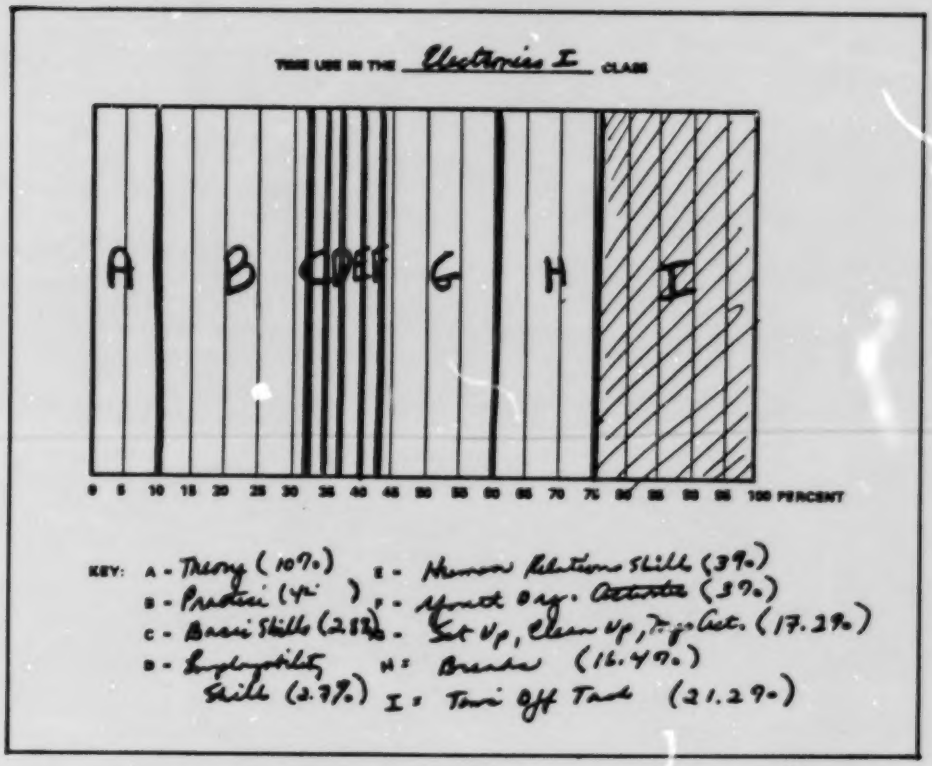
TIME USE IN THE Electronics I CLASS
A
B
C D E F
G
H
I
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 PERCENT
KEY: A - Theory (10%)
B - Practice (4%)
C - Basic Skills (28%)
D - Employability Skills (2.7%)
E - Human Relations Skills (3%)
F - Work Org. Activities (3%)
G - Set Up, Clean Up, Proj. Act. (17.2%)
H - Breaks (16.4%)
I - Time Off Task (21.2%)

Figure 12. Example of Worksheet III used to display time use

example, in some schools, teachers and administrators may decide that *more* than 25 percent of time off task is unacceptable and must be remedied.

Remember that research in vo-tech classes shows that the *average* time on task in secondary classes was 71 percent and 83 percent in postsecondary classes. These averages, however, include the lowest and highest rates in many vo-tech classes. These averages are comparable to those found in elementary and academic secondary classes. But the average may not be the acceptable level for your school or college. Many teachers and administrators believe students should be on task 85 to 95 percent of the class time.

When interpreting the results, you should also consider the purpose of the time-use analyses. If these analyses are done as inservice activities or for process evaluations, the teacher and the observer (and perhaps the administrator) should discuss the results. It is very important that the discussion be as nonthreatening as possible. After all, the purpose is to improve the program, not to discourage the teacher.

Worksheet IV (found in the Appendix) can be a very helpful guide to the discussion. The completed observation forms and Worksheet III should also be on hand. Figure 13 shows how a teacher, Mr. Lee, and an observer, Mr. Howell, used the worksheet to interpret the results of the time-use analysis. Notice that most of the comments simply provide information. None are critical or judgmental.

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Worksheet IV

INTERPRET RESULTS

Class Electronics I Date Jan 11

Teacher Mr. Lee Observer Mrs. Howell

Directions: Duplicate copies of this worksheet for the teacher, observer and others involved in interpreting the results. Refer to the completed observation forms and Worksheet III to answer and discuss the following questions:

1. What was the average percent of students' time on task? 61.7%
2. How much of the time (percent) did students spend on
   - theory of technical skills? 10%
   - practice? 23%
   - basic skills? 2.8%
   - employability skills? 2.7%
   - human relations skills? 3%
   - youth organization activities? 3%
3. How was the time used in relation to the objectives of the class? OK – could have had more time on theory and basic skills.
4. Why did students spend 14.5 % of time waiting or doing nothing?
   Students waited for help. Mr. Lee was busy with other students. Also, waited for buses at beginning of class.
5. How much time (percent) did students spend on
   - set up? 4.6%
   - clean up? 7.2%
   - managerial tasks? 4.9%
6. How much time (percent) did students spend on breaks? Were the breaks taken as a class or individually? 15.6 Mostly class breaks
7. What time was class started? What time was clean up announced? Started 8:20 area clean up about 11:00
8. How much time (percent) was used for role call and other managerial activities? about 5.0%

Mr. Lee would like to increase time on task time and decrease time waiting.

Figure 13. Example of Worksheet IV used to interpret time use

Teachers are often surprised to find that their students spent so much time off task. Many want to know when this occurred. The observation forms will have this information. Perhaps there was considerable time spent waiting for students to arrive to class in the morning. Or, there may have been long periods of time when students waited for the teacher to give them individual help. It is a good idea to make a list of the reasons for time off task.

Take a look at how the time on task was spent, also. Some on-task activities are more productive than others. How much time was spent cleaning up? Was that amount necessary? What about

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time for employability skills—was any time devoted to that aspect of the curriculum? Should there be? Should more time be devoted to teaching students how to behave on the job? What about time for practice—was it well spent on progressively more challenging tasks? Or, did students practice one skill over and over again without learning anything new?

If the purpose of the time-use analyses is research, you may want to do further analyses of the results. If so, you can use a computer program with a chi square test to find out, for example, if there is a difference in time on task between long and short vo-tech classes. If there is, with long classes having a greater proportion of time on task than shorter classes, a chi square test would indicate whether or not that difference is merely due to chance. If the tests show that it is not, administrators may decide to schedule longer blocks of class time. Information about differences can be very helpful when making various decisions about vo-tech classes within a school system or in a community college or technical school.

Working with the results of time-use analysis is interesting and challenging. There are many factors to consider, but undoubtedly the most important to remember is that *this is a tool for improving vo-tech education*. Whether the analysis is done for inservice purposes or for research, teachers should be informed and included in the process. Be sure that interpretation is positive, not judgmental. You will find that most teachers are eager to use their time-use analysis to improve learning in their classrooms.

Chapter 5
Third Stage: Change Day-To-Day Practice

The third stage of enhancing time on task is to make changes in day-to-day practice. As has been mentioned, time is one of the few factors teachers can control in their classrooms, and time-use analyses make control possible. They give teachers very specific information to work from. Many teachers want to increase their students' time on task once they have analyzed time use in their classrooms.

There is no one way to do this; teachers whose students use time well employ a variety of techniques and behaviors to good effect. This means teachers can freely choose methods that suit their teaching styles, subjects, and classes.

After a class is analyzed and discussed, the teacher should read the following material on ways to enhance time use. Then Worksheet V, which is discussed in the last section of this chapter, can be used to develop a plan of action.

Enhance Time Use

The suggestions given here are based on a study of the factors that influence time use in vo-tech classrooms (Halasz, Behm, and Fisch 1984). The study involved 9 secondary and 16 post-secondary classrooms. A total of 480 students were observed in 2 comprehensive high schools, 5 area vocational schools, a community college, and an adult technical school.

The recommendations in this chapter are based on the results of the study. They reflect the behaviors and attitudes observed in teachers whose classes do spend higher-than-average time on task. Too many recommendations are given for any teacher to adopt them all; they are intended to give a range of options. Depending on the results of observation, one or several changes may seem most appropriate.

Treat Time as an Important Resource

This straightforward concept is at the heart of any effort to enhance time on task. In essence, it means seeing time in each class as limited and important. For example, teachers who feel time is

important routinely begin their classes when the bell rings. Five or ten minutes of disorganized activity and chatting at the beginning of each class add up to a large amount of wasted time over the school year.

When we consider the actual time involved, the importance of starting on time becomes obvious. If 10 students in a class of 15 wait 10 minutes every day for the last 5 students to arrive, they will lose an astounding 300 *hours* of learning time during a a typical school year.

When students are bused in from other schools, starting on time can be a problem. Some classes have been observed that included students who always arrived by bus at least 10 minutes late. In situations of this kind, some teachers delay beginning class, and allow students to socialize until the late-comers arrive. Those who see time as important, however, have the students who are present begin individual assignments rather than wait until everyone is there. The short lecture on theory, or specific skills, which often begins a class can be delayed in this situation until all students have arrived. Meanwhile, those who are present are not wasting time.

In vo-tech classrooms, clean-up activities can also decrease time on task. Clean up is necessary, but is seldom an activity during which the most significant learning takes place. Yet, classes have been observed where clean up always began 30 minutes before the end of the class. Observers noted much of that time was not used for clean up. Instead, students cleaned their work stations and then stood around chatting or just waiting. For vocational-technical teachers, simply decreasing this kind of start-up and clean-up time is often an excellent way to gain time on task.

Many teachers, especially at the secondary level, choose to instruct students one-on-one in each skill rather than teaching the class as a whole. This can lead to a great deal of off-task time while other students await instruction. Whereas one-on-one teaching usually plays a large part in the vo-tech classroom, many skills and concepts can be taught to groups of students. When time is seen as an important resource, teachers seem to take care that students are not off task, waiting for individualized instruction.

Define Goals Clearly

Although such factors as a teacher's methods, style of interaction, and sensitivity to students' needs are important to time on task, none is as significant as the definition of goals. The research (Halasz, Behm, and Fisch 1984) showed that teachers who clearly state goals for the class and for individuals have students who spend the highest proportion of time on task.

Goals that were both explained verbally and posted seem to help students most. When students worked on individual assignments, posting goals seemed especially important. Students referred to the goals often, and used them to keep working rather than standing by until the teacher was free to give them their next assignments.

Secondary teachers spend about one-third of their time giving individualized instruction. For them, it can be especially helpful to define longer-range goals for the students. Otherwise, the demands of setting step-by-step goals verbally for each student can be exhausting.

One carpentry teacher whose class was observed for this study had real problems because he did not define goals. He had given the class the group project of building a small shed. The project included a wide variety of challenges, but many of the tasks used the same set of skills. The teacher might have given more of an overview of general skills. He might also have given specific

areas to designated students, who could then have worked at their own pace. Instead, each student had to wait for the next assignment after each small step. The process of defining goals in a piecemeal fashion was almost more than the teacher could handle. While he struggled, students stood around, off task. Teachers with situations like this can benefit greatly by defining goals for their students in advance, and by providing better overviews of the whole task or larger chunks of the task.

Plan and Organize

Planning makes it possible not only to set realistic goals, but also to explain them clearly to the class. Advance organization leads to higher time on task in other ways as well. For instance, vo-tech classes often depend on supplies of some kind, such as typing paper, wood, cooking supplies, or solder. When these materials are not ready, students have to wait until they are. On the other hand, if supplies are organized students can spend more time on task, and teachers are able to use their class time in more productive ways.

Some of the problems that consume time, such as equipment shortages, are beyond the teacher's control, but they can still be combatted through planning. For instance, many times it is possible to plan other assignments that do not require the use of equipment, so that students who are waiting their turns for equipment can be using that time on other activities.

Troublesome equipment problems can sometimes be minimized through planning. A business/office teacher told observers that she made a point of going through each assignment on each brand of word processor before class. This prepared her for the questions and problems that might arise because of differences among the machines. Because vo-tech classes often make heavy use of equipment, planning of this kind can be especially valuable.

Use a Range of Teaching Methods

When teachers vary their methods and use such techniques as audiovisual aids, demonstrations, field trips, and guest speakers, students spend more time on task. Unfortunately, most teachers use a very narrow range of methods, and often overlook the method that would be appropriate for the teaching task. Even though most of the teachers observed were obviously competent in their areas and willing to work hard in the classroom, their poor choice of methods seemed to undercut their efforts. Some of the teachers observed used nothing but one-on-one instruction, especially those who were using individually-paced competency-based instruction.

The competency-based curriculum does demand one-on-one instruction, but time on task is greater when teachers also use such methods as lectures and demonstrations to give students an overview of the subject matter. Some teachers provide this kind of orientation through lectures and demonstrations, but only at the beginning of the school year. It would be helpful to continue using these methods to explain the new tasks students begin throughout the school year.

Have Positive Expectations,
Provide Positive Reinforcement

Teachers who discourage independent work often convey the belief that students will do nothing right if left on their own. Some secondary teachers observed seemed to feel that students would not do anything right in any case, no matter how explicit the instructions. Students in their

classes seemed more demoralized and were less on task than students whose teachers clearly had confidence in their ability to do the work.

Those teachers who obviously had positive expectations of their students usually had the habit of praising good work as well. The virtues of positive reinforcement (which have been much discussed in teacher education) were evident in these classrooms. Students seemed to have a keener desire to work and tended to stay on task.

Encourage Students to Work Independently

When students are forced to depend on teachers for instruction every step of the way, time on task is not the only benefit lost. Students also lose the opportunity to explore alternative methods, to develop confidence in their own judgment, and to take command over their tasks.

Overcontrol by teachers did not seem to be a problem in the postsecondary classes observed, but was often evident in secondary classes, especially when students were grouped in several rooms. Student dependence on teachers often led to high amounts of time off task, as the students waited for instructions or help.

Certainly teachers should not abdicate control over their classes; too much control of the learning process, however, seems to interfere with learning. Time on task is highest when teachers encourage students to work autonomously as much as possible. Independence can be fostered through teaching necessary skills in advance, and through providing longer-range goals for students to work toward without constant supervision.

Assign Meaningful Tasks

Enhancing time use should not mean merely increasing time on task, when the tasks in question have little value as learning activities. Observers have noted that some classes were devoted largely to routine work that did little to advance students' skills. In other classes, students delayed tackling meaningful work in favor of busy-work which was easier or less challenging. Perhaps because these students were quiet and occupied, their teachers left them alone.

In general, students are more often on task when they are involved in challenging activities. In one class observed, students were given a simple, specific task at the lathe. This was a good beginning task, but they were assigned to do it again and again. To the observers it was obvious that they were bored and were carrying out the assignment in the most perfunctory way. Students in this kind of situation seem to alternate between fulfilling requirements in a rote fashion and seizing any opportunity to be off task.

Whether activities contribute to learning in meaningful ways is a decision that may be best answered by individual teachers, perhaps with input from their supervisors. In general, the best index of effective teaching is not the number of students on task but the number engaged in doing tasks that give genuine opportunities for learning.

Minimize Scheduled Breaks

In some schools, breaks may be mandatory. Where they are not, scheduled breaks should be avoided. This is not a harsh policy, but one that is suggested by the findings of the study. When

students take breaks only as they need them, they usually spend less time off task. Postsecondary students in particular use time better when they take breaks as needed. Sometimes, in fact, students do not want breaks, and will work through scheduled breaks if permitted. In one secondary-level machine shop class, the teacher had to shut off the electricity to force students to stop working.

Not only do mandatory breaks use class time, but regaining the work momentum takes additional time. Students are often off task for a surprising amount of time after a break.

Decrease Interruptions

Interruptions—disturbances that originate outside the classroom—do not seem to have a major impact on the time on task of the class as a whole. Interruptions can, however, decrease time on task for individual students. Occasionally teachers, especially at the secondary level, allow students from other classes to come into the classroom at will. This disrupts the learning activity of the friends they seek out and with whom they talk.

Some interruptions, such as public address announcements and fire drills, may be beyond the teacher's power to control. Interruptions by other students, however, can be easily controlled by simply closing the door when the class begins. This prevents the loss of on-task time that results from student interruptions, and is one of the easiest changes a teacher can make to increase individual students' time on task.

Provide Students with a Role Model

When teachers are obviously dedicated to their work, students seem to work better also. Competence, organization, and commitment to goals all impress students and provide them with a model of good work habits.

Teachers—especially in vo-tech classes—can be role models for students through the way they dress. In some classes with high time on task, observers have noted that teachers dress in a way suitable to the area of specialty. One word processing teacher, for instance, dressed in appropriate business outfits. She also made frequent references to her own knowledge of the world of business and the skills students would need. Overall, she seemed to be a good role model for her students in her dress, behavior, and attitude.

Not all teachers who were observed took care to provide good role models. In one class, two instructors periodically reminded students to wear hard hats—but neither ever wore a hard hat during the week they were observed. This careless practice would seem to indicate that the teachers did not really believe in the importance of safety practices. Their students are probably less likely to take safety seriously, as a result. In general, when teachers obviously believe in the importance of the discipline, students seem more likely to be disciplined and motivated to work.

Develop Action Plans

Now that you have read about the strategies teachers use to enhance students' use of class time, you can develop or help teachers develop action plans to make changes in their day-to-day practice. Use the information from Worksheets III and IV to decide what changes are needed.

Since change is really up to teachers, they should decide what changes to make. Based on the time-use analyses of their classes, teachers should plan to make one to three changes. Using a copy of Worksheet V, they should—

1. list the current use of student time that needs to be changed;

2. list their goal for change; and

3. list specific strategies for accomplishing that goal.

Figure 14 shows an example of the action plan Mr. Lee filled out.

Mr. Lee's analysis showed that students were off task almost 20 percent of the time. This time loss occurred for two reasons. The students waited for class to begin, and they waited during class for instructions between tasks. Mr. Lee wants to cut this lost time at least in half. He plans to write individual student assignments on the chalkboard daily, so students can start working as soon as they come to class. Thus, even if buses are late, students will not waste time waiting for others to arrive. He also plans to give short demonstrations more often to review the skills students will use that day. Mr. Lee has thought further about this problem, and has decided to experiment with a peer-teaching strategy. He will pair more advanced students with less advanced students to avoid the long waits the latter group has between his individual explanations.

An action plan is a commitment teachers make to themselves about changes in their teaching behaviors. Without an action plan, good intentions may not be carried out. Some teachers are likely to find the results of the time-use analysis of their class interesting but not compelling in terms of change. They may become motivated by designing their action plans. These plans can also be used as part of their annual staff development goals.

******

The purpose of this handbook has been to guide you through the process of analyzing time use in vo-tech classes. Five worksheets and a class observation form guided you—whether you are a teacher, an administrator, an evaluator, or a teacher educator—through planning and conducting time-use analyses. The steps given here were derived from those used in research. The strategies for increasing time on task are also based on research in secondary and postsecondary vo-tech classes. They are solid recommendations that should help any committed teacher improve time on task.

Time-use analysis, as this handbook shows, is not overwhelmingly difficult to carry out—it can be done by anyone who simply follows the guidelines. Once you have done one analysis, it is surprisingly easy and interesting to do the next. The results are very specific, and areas for change are usually easy to target. Most important, positive changes in how time is used lead to more learning in the classroom.

Good luck in your continued work to improve vo-tech instruction by enhancing student time on task!

Worksheet V

TEACHER'S ACTION PLAN

Teacher Mr. Lee Date June 11

Directions: Use this worksheet to decide what changes you will make to increase student time on task. Refer to Worksheets III and IV for information about the current use of time in your classroom. Plan at least one, but no more than three changes at this time. Good luck in accomplishing your goals!

Current use of student time which I want to change. (List percents of time if possible.)	My goal for student use of time (List percent of time if possible.)	Specific strategies I will use to accomplish my goal.
1. Students wait, do nothing too long (14.5%).	Reduce waiting time to no more than 7%.	• Start class at 8:00 instead of waiting for buses. Give indiv. assignments. • Provide more overviews so students can procede on own. • Try peer-teaching so students can help each other.
2. Students whisper and off task too much (6.7%).	Reduce off task time to no more than 5%.	• Same as first two above, plus: • give surprize quiz now and then to motivate completion of practice assignments.
3. Students not on theory or basic skills enough (10% + 2.8%).	Increase time on these to at least 20% combined.	• Provide more assignments to read, see films, and do work book exercises. • Provide more opportunities for discussions about theory.

Figure 14. Example of Worksheet V used for teacher's action plan

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Appendix

- Observation Form
- Worksheet I: Observation Schedule
- Worksheet II: Compute Time Use
- Worksheet III: Display Time Use
- Worksheet IV: Interpret Results
- Worksheet V: Teacher's Action Plan

OBSERVATION FORM

Date _____ Class _____

Observation 1 2 3 4 5 Observer _____

School _____ Number of Students Enrolled _____

Class Begins _____ Ends _____

TIME	NUMBER OF STUDENTS ON CURRICULUM-RELATED TASKS						NUMBER OF STUDENTS ON OTHER TASKS			NUMBER OF STUDENTS OFF TASK						NOTES
	Theory of Technical Skills (lecture, discussion, test, etc.)	**Practice of Technical Skills** (hands-on)	**Basic Skills** (read, write, compute)	**Employability Skills** (resumes, world of work information)	**Human Relations Skills** (interpersonal, on-the-job)	**Youth Organization Activities** (projects, etc.)	**Set Up** (organize for practice, etc.)	**Clean Up** (own work area, classroom, shop)	**Managerial Tasks** (fill out school forms, listen to announcements, etc.)	**Scheduled Class Breaks**	**Individual Breaks**	**Wait**, do nothing, "hang around"	**Whisper**, talk quietly	**Behave Disruptively**, warrants discipline	Number of **Students Present** at this moment	Describe any **unusual circumstances** that are **decreasing time-on-tasks** opportunities such as assemblies, fire drills, etc.
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Worksheet I

OBSERVATION SCHEDULE

Date _____ Organizer _____

School _____ Position _____

Class	Begin-End Times	Teacher	Observation Dates					Observer
			1st	2d	3d	4th	5th	

Worksheet II

COMPUTE TIME USE

Class _____ Dates of Observation _____

Directions: Make several copies of this worksheet. Then add the total number of students present on each page of the observation form to find the grand total. The grand total of students present is [ ]. Now, follow the directions in Part A and B. The answers in the last column show the proportions (percent) of class time used for each activity. Keep in mind that all the percents (or the subtotal percents) should add to 100 percent.

		PART A List the totals from the bottoms of all the observation form pages used for this class.											PART B Divide the grand totals for each activity by the grand total number of students present. Write the answer in the proportion (percent) column.		
	Activity \ Page	1	2	3	4	5	6	7	8	9	10	11	Grand Total / Divided By Grand Total Students Present	is	Proportion (Percent) of Class Time
	Theory of Tech. Skills												÷	=	%
	Practice of Tech. Skills												÷	=	%
	Basic Skills												÷	=	%
	Employability Skills												÷	=	%
	Human Relations Skills												÷	=	%
	Youth Org. Skills												÷	=	%
SUB TOTAL	Curriculum-Related Tasks												÷	=	%
	Set Up												÷	=	%
	Clean Up												÷	=	%
	Managerial Tasks												÷	=	%
SUB TOTAL	Other Tasks												÷	=	%
	Class Breaks												÷	=	%
	Individual Breaks												÷	=	%
SUB TOTAL	Breaks												÷	=	%
	Wait, Do Nothing												÷	=	%
	Whisper, Task Quietly												÷	=	%
	Behave Disruptively												÷	=	%
SUB TOTAL	Time Off Task												÷	=	%

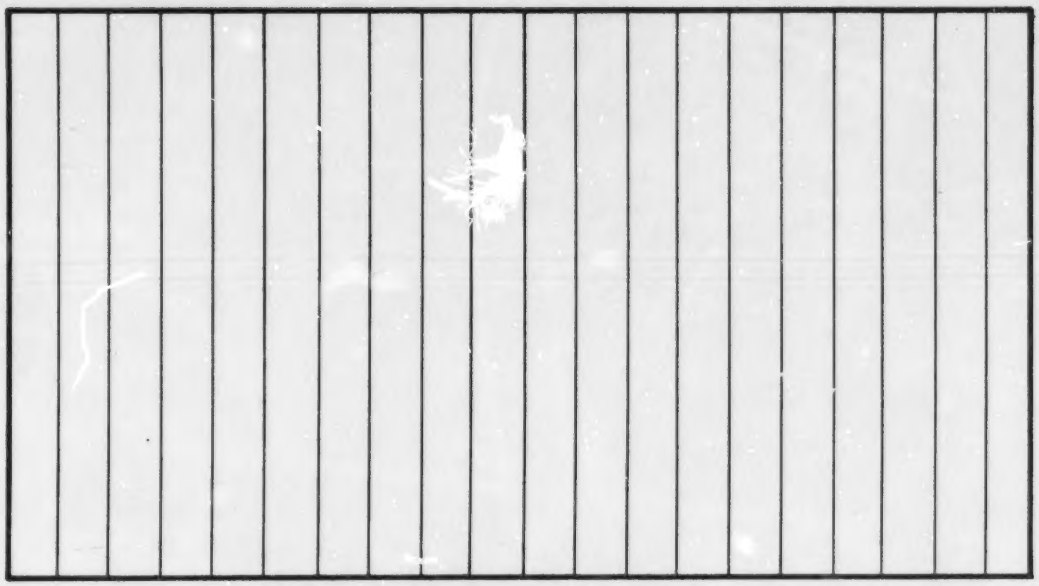
Worksheet III

DISPLAY TIME USE

Class _____ Observer _____

Directions: Use copies of this worksheet to graphically show the proportions of time calculated in Worksheet II. Imagine that the block of time below represents the time in an entire class period, or 100 percent. Using the proportions of time calculated on Worksheet II, **draw a line to divide the class time by the various activities.** For example, if 25 percent of the time was used for theory of technical skills, draw a vertical line at the 25-percent mark. Continue drawing lines until all the activities are shown. Next, code each division of time with a letter. Then, write a key to indicate the type of activity each letter represents.

TIME USE IN THE _____ CLASS



KEY: A =

B =

C =

D =

E =

F =

G =

Worksheet IV

INTERPRET RESULTS

Class _____ Date _____

Teacher _____ Observer _____

Directions: Duplicate copies of this worksheet for the teacher, observer and others involved in interpreting the results. Refer to the completed observation forms and Worksheet III to **answer and discuss** the following questions:

1. What was the average percent of students' time on task? _____

2. How much of the time (percent) did students spend on
   - theory of technical skills? _____
   - practice? _____
   - basic skills? _____
   - employability skills? _____
   - human relations skills? _____
   - youth organization activities? _____

3. How was the time used in relation to the objectives of the class?

4. Why did students spend _____ % of time waiting or doing nothing?

   _____

5. How much time (percent) did students spend on
   - set up? _____
   - clean up? _____
   - managerial tasks? _____

6. How much time (percent) did students spend on breaks? Were the breaks taken as a class or individually? _____

7. What time was class started? What time was clean up announced? _____

8. How much time (percent) was used for role call and other managerial activities? _____

Worksheet V

TEACHER'S ACTION PLAN

Teacher_____ Date_____

Directions: Use this worksheet to decide what changes you will make to increase student time on task. Refer to Worksheets III and IV for information about the current use of time in your classroom. Plan at least one, but no more than three changes at this time. Good luck in accomplishing your goals!

Current use of student time which I want to change. (List percents of time if possible.)	My goal for student use of time (List percent of time if possible.)	Specific strategies I will use to accomplish my goal.
1.		
2.		
3.		

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